Appendix B
General Herbicide Use Design Features

If a program of integrated pest management that includes the use of herbicides becomes part of the Big Bar Fire Salvage Project, the following design criteria to protect human health, water quality, and natural resources will be incorporated into the proposed action. Herbicides would be applied in accordance with: 1) product label directions; 2) California Department of Pesticide Regulation requirements; 3) Forest Service best management practices for water quality (USDA Forest Service 2011); and 4) Forest Service direction (FSM 2900, 2150 and 2200) and Handbook (FSH 2109.14). This project will include a Pesticide Use Spill Plan. Prior to any herbicide use, a Pesticide Use Proposal (PUP) (FS-2100-2) and safety plan (FS-6700-7) will be completed by the project leader and approved by the Responsible Official. These documents will be included in the project record.

- Specific design features, best management practices, and mitigation measures are summarized in the table below.
- A June 20, 2014, Presidential Memorandum recommends additional best management practices to promote the health of honey bees and other pollinators. To address this recommendation, the U.S. Department of Agriculture and U.S. Department of the Interior have developed best management practices to protect pollinators when implementing management activities, including pesticide treatments (USDA and USDI 2015). Although not yet required, these best management practices would be followed and are consistent with the project design features for this project.

Two common herbicides are discussed below, but other commercially available herbicides may be used instead of or in addition to these, depending on the species of non-native invasive plants being treated.

Triclopyr (trade names include Garlon™ 3A, Milestone VM Plus). This herbicide provides pre-and post-emergence control of woody and broadleaf plants and re-sprout control as stump treatment on woody plants. It is selective and has little impact on grasses. It can reside in soils for up to 6 months. Triclopyr can be used in combination with aminopyralid in a pre-mixed formulation (e.g. Milestone VM Plus).

Glyphosate (trade names include Accord®, Aquamaster®). This is one of the most widely used herbicides available. It is non-selective (broad spectrum), so it may injure non-target plants. It provides only post-emergent control and is not absorbed through roots. It is non-persistent and relatively immobile in soil, although it can remain in soil for 4 to 8 months. This non-persistence and relative immobility in the soil means that glyphosate is often the most environmentally benign of the commonly used herbicides. Plants treated with glyphosate can take several weeks to die; repeat application is often necessary to remove plants that were missed during the first application.

- There has been some controversy and public alarm recently concerning safety issues in the use of glyphosate. Disparate reporting by various public agencies and NGOs regarding potential risks to applicators and to the public has led to much confusion around this issue. The California Invasive Plant Council (Cal-IPC), a non-profit organization, has prepared a "fact sheet and position statement" summarizing all best-available science and policy on this issue (Cal-IPC 2017). Cal-IPC summarizes its policy on the use of glyphosate thus: "Cal-IPC supports the use of glyphosate in invasive plant management as part of an of Integrated Pest Management (IPM) approach. When using glyphosate according to the label, with appropriate personal protective equipment and best practices, glyphosate is low-risk for wildlife, applicators and the public."

ID	Project design feature	Purpose
1	Herbicide application will comply with product label directions and applicable legal requirements.	To avoid or minimize the risk of soil, surface water, or groundwater contamination. To minimize risk to special status plants and wildlife as well as other biological resources. To ensure compliance with legal requirements. Compliance with BMP 5.8 (USDA Forest Service 2011)
2	Herbicide formulations would be limited to those containing one or more of the following five active ingredients: aminocyclopyrachlor, aminopyralid, chlorsulfuron, clopyralid, and triclopyr.	To minimize potential adverse effects on workers, forest users, and resources.
3	Herbicide applications would only treat the minimum area necessary to meet site objectives.	To minimize potential adverse effects on workers, forest users, and resources.
4	Herbicide application methods are limited to select (e.g. low pressure hand sprayer, wicking, wiping, stem injection) and directed spray (use of backpack sprayer or hand held nozzle to aim application at specific target species), as permitted by the product label and project design features. No aerial herbicide applications will occur (USDA and USDI 2015).	To minimize potential adverse effects on workers, forest users, and resources.
5	Spray application drift control measures: 1) Only ground based equipment will be used 2) All applications will cease when weather conditions exceed those on the label 3) Applications will not be performed when the National Weather Service forecasts a greater than 70 percent probability of measurable precipitation (greater than 0.1 inches) within the next 24 hour period 4) Applications will cease when wind speed exceeds 10 mph 5) Spray nozzles will produce a relatively large droplet size (500-800 microns) 6) Low nozzle pressures will be used (15 psi) 7) Spray nozzles will be kept within 24 inches of target vegetation during spraying 8) A pressure gauge or pressure regulator will be required on each backpack sprayer	To minimize the risk of pesticide drift onto water or non-target areas, in order to minimize impacts to water quality, special status plants and wildlife, non-target vegetation, and other biological resources (e.g. pollinators, aquatic organisms). Compliance with BMP 5.13 (USDA Forest Service 2011) and BMPs regarding pollinators (USDA and USDI 2015)
6	Herbicides will be applied by trained and/or certified applicators in accordance will label instructions and applicable federal and state pesticide laws. Mixing of herbicides will be supervised onsite by, at a minimum, a Qualified Applicator certified by the State of California.	To establish the level of trained / certified personnel for herbicide applications.
7	Personal Protective Equipment (PPE) will be used in accordance with the product label and California Department of Pesticide Regulation requirements.	To minimize potential adverse effects to workers.
8	Chemicals will be stored in designated storage facilities consistent with FSM 2109.14, Chapter 40. Unused herbicides will be disposed of in accordance with the product label and FSM 2109.14, Chapter 40. If the product label and FSM differ, the more restrictive storage and disposal guidelines will be followed.	To minimize potential adverse effects on workers, forest users, and resources. Compliance with BMP 5.11 (USDA Forest Service 2011).
9	No directed spray or broadcast herbicide application will occur on weekend days between Memorial Day and Labor Day in recreation sites (campgrounds, trailheads, and dispersed camping areas).	To minimize potential adverse effects on forest users.
10	For herbicide treatment within 100 feet of recreation sites (campgrounds, trails, and trailheads), cautionary notice signs will be posted at the recreation site prior to herbicide treatments.	To inform and to minimize potential adverse effects on forest users.

APPENDIX B REFERENCES

Cal-IPC. 2017. California Invasive Plant Council Cal-IPC. Cal-IPC Fact Sheet and Position Statement – The Use of Glyphosate for Invasive Plant Management. www.cal-ipc.org/wp-content/uploads/2017/11/Cal-IPC-glyphosate-policy.pdf

USDA Forest Service. 2011. Best Management Practices (BMP) Soil and Water Quality Management Handbook Amendment - 2509.22_10. FSH Amendment, Vallejo: USDA Forest Service, Vallejo, CA.

USDA and USDI. 2015. Pollinator-Friendly Best Management Practices for Federal Lands. US Department of Agriculture and US Department of Interior, May 11, 2015 (In response to Presidential Memorandum of June 20, 2014). Available online: http://www.fs.fed.us/wildflowers/pollinators/BMPs/